

North Carolina Highway Bulletin

VOL. IV

JULY, 1923

NO. 5



SCENE ON RALEIGH-DURHAM HIGHWAY—ROUTE 10.

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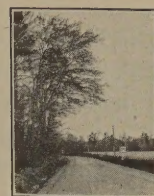
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NORTH CAROLINA HIGHWAY BULLETIN



VOL. IV, NO. 5

H. K. WITHERSPOON, Editor

JULY, 1923

Projects 784 and 785 in the "State of Wilkes"

By J. H. CRANBROOK, Resident Engineer

IN almost every State throughout the Union there are certain localities which, owing to their topographical isolation or geographic surroundings, become more or less an independent principality unto themselves; such is the "State of Wilkes." This vast county, hemmed in by the "Blue Ridge Mountains" to the north, and the orchard topped, "Brushy's" to the south, has for years been the intermediary stamping ground for those hardy mountain people, who travel between the counties beyond the mountains, known as the "Lost Provinces," and the rest of the State to the East and South.

When a State, such as our own North Carolina, enters upon a great highway building program, she is confronted by demands, just and unjust, selfish and unselfish, supported by the many or the few, as the case may be, throughout her commonwealth. There are the roads sought for pleasure, convenience and beautification, but roads primarily were and still are constructed to meet the needs of development, and the roads traversing the "State of Wilkes" are one and all of this latter variety, and logical indeed that they should be so, as the terminus of rail facilities is virtually at the border line of this "State."

Projects 784 and 785, now being constructed in the "State of Wilkes" are both links in the chain of Route 67, which extends from the "Lost Provinces" to the northward, through Wilkes, to Statesville, Charlotte, and the South. It is a route of ever increasing popularity, and none who have ever been afforded the oppor-

tunity of observing, during certain seasons of the year, the endless truck loads and wagon trains of produce and fruit, could doubt for a moment its service as an empire developer.

Project 785, something over two and one-half miles in length, is of plain concrete pavement, so chosen for much the same reason that a railroad is double-tracked near its terminus; it will handle a concentrated traffic from the mountains as well as steadily growing suburban traffic into the city of North Wilkesboro. Work on this project is just getting under way.

Project 784, starting at the village of Moravian Falls, winds its way up the picturesque valley of the Moravian creek, literally in the shadow of "Poor's Knob," the highest peak in the Brushy range, until with a final crossing of the little creek, it starts on its steady upward climb of 5% gradient to the summit at "Kilby Gap"



WINDING AROUND "POOR'S KNOB"

and the Alexander County line. For the present the road will be surfaced with local material, although the construction throughout follows most modern practice in roadbuilding. All structures are of reinforced concrete of which there are twelve, and adequate roadway width is provided.

The principal features of interest on this project are its structures consisting of various types and sizes of bridges and culverts, the ease of its grades from the foot to the summit of the mountain and the safety of its alignment, which assures a minimum of accident to the motorist who will use judgment in the exercise of "safety first" laws in a mountainous section.

Raleigh-Durham Highway Completed

By C. O. BOYD, *Resident Engineer*

CONSTRUCTION work has been completed on the Raleigh-Durham Highway and the two cities are linked together by a smooth ribbon of concrete and asphalt twenty-eight miles in length. The time has been, and not so far in the past, when to drive from one city to the other was almost an ordeal due to the exceedingly rough stretch of road in Durham County. Now the trip can be made with ease in an hour over the recently completed boulevard.

The highway is made up of four projects, two of which were built by the two counties with the assistance of Federal Aid funds and the two recently completed from State funds. Beginning at Raleigh the first of these projects,

Federal Aid No. 54 begins at the State Fair Grounds and extends to Cary. State Project 481 begins a short distance east of Cary and bears off to the right of No. 54, going under the Southern and Seaboard railroads just east of the town, and extends to the Durham County line, a distance of 7.4 miles. State Project 411 begins at the Durham County line and extends 5.8 miles to the forks of the Leesville road where it joins Federal Aid Project 36, which was one of the first projects constructed in North Carolina under the Federal Aid Law of 1916. This latter project extends from the point above mentioned to the eastern corporate limits of Durham.

The whole forms an unbroken stretch of pavement which is good "three hundred and sixty-five days in each year." Inasmuch as Federal Aid Projects have been completed some years and have been previously described in the *Bulletin* this article will deal only with State Projects 481 and 411.

Project 481, Wake County, was formally opened to

held at Cary in which the Chambers of Commerce of Raleigh, Durham, and Cary joined.

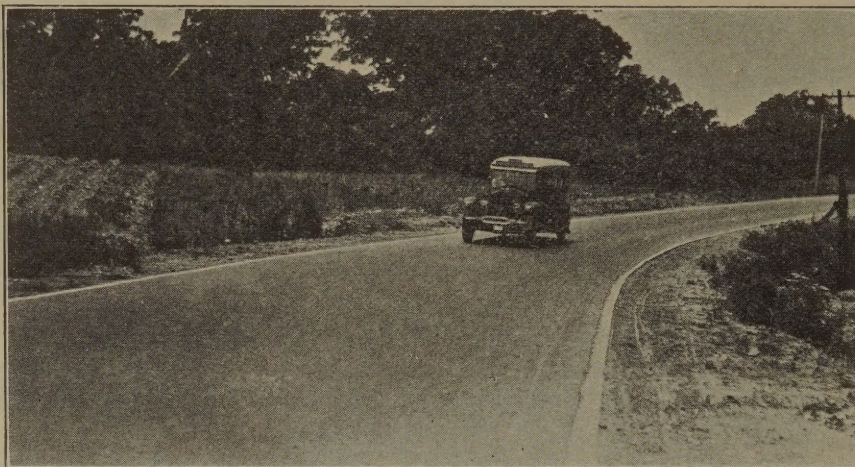
Of the total length of the project, 7.4 miles, about 5.1 miles is new location, while the remainder follows the old road. This relocation effected the shortening of the distance between the two towns by 0.5 of a mile and eliminated three dangerous grade crossings. Instead of

crossing the Southern and Seaboard railroads on a grade at Cary the new location carries the road under the tracks, while at Morrisville a dangerous crossing over the Southern Railway eliminated by relocating the road on the north side of the track. This relocation also straightened out the road eliminating many

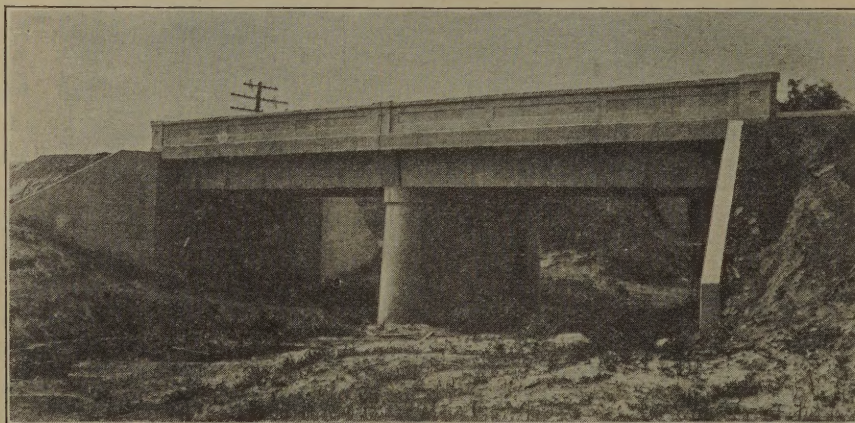
sharp curves, that part north of Morrisville having a tangent 1.2 miles long. The saving in distance of one-half mile resulted further in a saving of \$15,872 in money, this being the approximate cost of constructing this length of the road.

The project was let in two contracts; the Union Paving Company, of Philadelphia, being awarded the contract

for grading, pipe culverts, and the paving, while P. R. Ashby, of Raleigh, was given the structures. The roadway was begun on January 24, 1922, and the structures on June 5, 1922. The paving is 18 feet wide and consists of a wearing course of asphaltic concrete two inches thick laid on a concrete



BUS FARES WERE CUT IN HALF WHEN ROAD WAS PAVED



BRIDGE ON RALEIGH-DURHAM HIGHWAY

base course five inches thick. The structures consist of seven reinforced concrete culverts of various sizes and one reinforced concrete deck girder bridge consisting of two spans of 37'-4" each, over Crabtree creek at Morrisville. This bridge replaces an old through truss bridge with a wooden floor and increases the roadway from 18 to 20 feet.

Greenville-Bethel Highway Under Construction

By W. H. ROGERS, JR., *Resident Engineer*

WHEN the tobacco market opens in Greenville about the middle of August farmers coming in over Route 11 from points north of the town will find a road somewhat different from the one over which they have been accustomed to travel in years past. No more will they bump to town through holes or drag through sandy stretches with a light load for with the completion of the hard-surfaced highway, known officially as State Project 183-A, they will be able to haul a maximum load with the least effort and in perfect comfort.

Project 183-A, Pitt County, begins at the northern corporate limits of Greenville and extends in a northerly direction on Route 11 to Bethel, a total distance of 13.54 miles. On the southern end it connects with Route 91 for Wilson, Raleigh, and points west and Washington on the east. On the north it joins Route 90 for Tarboro, Rocky Mount, and points north and west, and Williamston, Plymouth and Columbia on the east. Route 11 begins at Bethel and extends in a southerly direction through Greenville, Kinston, and connects with Route 40 at Kenansville; thus it will be seen that Project 183-A is not merely of local importance.

The project traverses a section that is flat and swampy in which is located the large swamps surrounding Grindle creek, which is crossed twice by the road. This fact made it necessary for the contractor to use an industrial railway for hauling his material.

The contract only covers the laying of the concrete surfacing and the completion of the earth shoulders as the grading was done by county forces and the structures covered by Project 183-B which was let to B. J. Boyles, of Wilson. S. J. Groves and Sons Company, of Duluth, Minnesota, were awarded the road work in

September, 1922. The contract calls for the construction of a plain concrete pavement 16 feet wide, using a 1:2:4 mix. The equipment for the job was shipped on a special through freight and unloading begun on October 16, 1922. The equipment, which is very complete, consists of four 6-ton gasoline locomotives, batch cars, batch boxes, six miles of track, one Koehring 21E mixer, one 10-ton roller, a Lakewood subgrade machine and a scarifier, two tractors, one road machine, gas pump, and Osgood crane, a Lakewood float belt, a roller, seven miles of 2" pipe, two thousand feet of forms, and an Ord finishing machine.

The first plant set-up which was at House Station, about three miles from Greenville, consisted of a bin for sand and stone, a cement house, a blacksmith shop, and a camp for the skilled labor which the contractor brought from Minnesota. The bin was equipped with measuring boxes with trip handles and a bottom dumping gate for proportioning and dumping the aggregate into the batch boxes which are loaded on industrial cars. The trains are loaded with stone and sand, then moved up to the cement

house where the cement is dumped on the aggregates. From here it goes to the mixer on the job. One locomotive is used to shift and make up trains while the other three are used on the road.

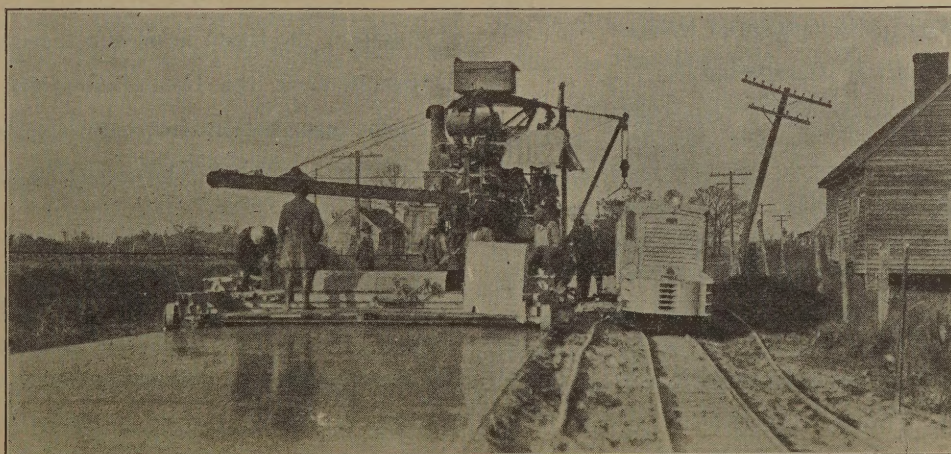
From the set-up at House Station the road was paved to Station 335+00. The plant was then moved to Whitehurst, another station on the Atlantic Coast Line Rail-

road, located about a mile from the road that is being paved. This gave a dead haul of one mile and a maximum haul of four miles along the road being paved.

After thoroughly scarifying the road it is bladed with a road machine to

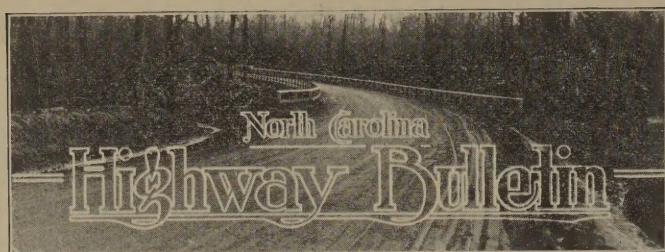


CURING CONCRETE BY PONDING



INDUSTRIAL RAILWAY AND FINISHING MACHINE ON PROJECT 183-A.

(Continued on



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RALEIGH, NORTH CAROLINA

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Address all communications in regard to BULLETIN to the Editor, Box 1140, Raleigh, N. C.

This BULLETIN will be sent gratis to any State or county official, contractor, newspaper, trade publication, library, or other person interested in the improvement of roads and in the work of the Commission. Advertising rates may be obtained on application.

Volume IV

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Table of Contents

	PAGE
Projects 784 and 785 in the "State of Wilkes".....	3
Raleigh-Durham Highway Completed.....	4
Greenville-Bethel Highway under Construction.....	5
Editorial	6
Contracts Awarded June 27th.....	7
Interesting Projects in Gates County.....	8
Ninth District Engineer Resigns.....	11
Blowing Rock Turnpike under Construction.....	12
Status of State Work in North Carolina.....	13
Monthly Detour Map Issued.....	18
Advertisements	19

Editorial

The cover illustration shows a stretch of the Durham-Raleigh Highway near Morrisville, on Route 10.

To prevent the abuse of the State Highways certain ordinances have been passed by the State Highway Commission by authority of the provisions of Chapter 160, section 10, of the Public Laws of 1923. These ordinances will be printed and distributed to motorists throughout the State. They will also be published in the August issue of the **Bulletin**.


Governor Austin Peay, of Tennessee will make an inspection trip over North Carolina highways in order to gather ideas to be presented with his recommendations to the General Assembly of his State which is about to enter into an extensive program. Next month's **Bulletin** will contain an account of his visit.

The number of grade crossing accidents should be materially reduced by the law requiring motorists to stop at grade crossings which went into effect July 1st. A number of crossings throughout the State have been marked with a seeming lack of common-sense, evidently in an attempt to comply with the letter of the law. Properly enforced this is a valuable law but it can easily be abused.

If the number of requests for roadmaps and information is any indication, motor travel to points of interest throughout the State is on the increase. The Publicity Department of the Commission will be very glad to furnish information in regard to routes, road conditions, and detours to those contemplating motor trips.

Much is heard of the "Lost Provinces" of the Western section of the State but there are several counties in the northeastern section of the State which are equally as "lost"—An interesting article in this issue tells what is being done to reclaim some of these counties.

Contracts Awarded June 27th

 SEVENTEEN projects aggregating 94.73 miles of roadwork were awarded at the letting held June 27th. Of this mileage 46.39 miles were let for immediate hard-surfacing, while the remainder of 48.34 miles will be graded and in some cases surfaced with topsoil or gravel.

Three of the projects making up a single stretch of road on Routes 91 and 12, in Wilson, Greene, and Pitt counties, from Wilson, via Farmville, to Bynums, constitute the largest single project yet undertaken by the Commission. The combined mileage is 19.7 miles and the estimated cost \$812,547. Plain concrete pavement will be laid for which approximately 58,000 barrels of cement will be required. The roadwork on the three projects was awarded to Smith Bros., Inc., of Dallas, Texas, while the Public Service Production Co., of Raleigh, were successful bidders for the structures.

Project 213, Craven County, consisting of 10.43 miles of road on Route 10, from Fort Barnwell to Jasper, was awarded to the Eagle Engineering Company, of New Bern, the estimated cost of construction being \$447,053.53. The contract calls for the laying of a 2-inch asphaltic concrete wearing surface on an 8 inch macadam base.

In the Fourth District four projects were awarded. The Michaux Construction Company, of Morganton, will build 3.83 miles of road in Granville County, on Route 57. This project, No. 431, is located between the Person County line and Berea and is estimated to cost \$42,896.

J. M. Gregory and Company, of Pittsboro, will build 3.82 miles of concrete road from Duke to Dunn, on Route 60, while T. J. Newell & Co., of Clinton, will build the structures. The combined cost of the project, No. 438, is estimated to be \$152,115.

The Michaux Construction Co., of Morganton, were also awarded Project 464, consisting of 11.58 miles of topsoil road in Person County between Roxboro and the Granville County line, the work being estimated to cost \$86,269.

Project 484-B, Wake County, an overpass over the Seaboard Air Line Railway at Millbrook, was awarded to the Booz-Boyd Company, of Raleigh, the estimated cost of construction being \$13,060.

Only one project was awarded from the Fifth District, this being Project 556, Montgomery County, 3.07 miles on Route 51, in and near Mt. Gilead, which was awarded to the J. F. Mulligan Construction Company, of North Wilkesboro. Bituminous macadam surfacing will be laid at an estimated cost of \$78,822.

Two projects were let from the Sixth District. Project 608-B, Anson County, 3.83 miles on Route 20 between Peachland and Polkton, was awarded to Ben F. Teeter, of Harrisburg, for the grading and the structures to J. A. Peterson, of Wadesboro, the total estimated cost being \$48,646.

Project 672 is a link in Route 10 and extends from the Iredell-Rowan County line 3.54 miles towards Salisbury. The grading and asphaltic concrete surfacing was let to Stearns Bros., of Statesville and the structures to J. A. Kreis, of Knoxville, Tenn. The total estimated cost of construction is \$167,756.00.

Project 702-B, Alleghany County, was the only work let from the Seventh District, this having been awarded to the Turner-Hartsol Construction Co., of Warrensville, for the grading and gravel surfacing, and the structures to the Luten Bridge Co., of Knoxville, Tenn. The work consists of 6.49 miles of road between Sparta and the Ashe County line on Route 69 and is estimated to cost \$191,737.

Four projects were let from the Eighth District, three of these being grading jobs and one hard-surfaced.

Hughes and Rae of Newland, were successful bidders on Project 802, Avery County, consisting of 5.68 miles of road between Newland and Elk Park on Route 175. For the present the road will be graded at an estimated cost of \$98,043 and surfaced later.

The grading work on Project 812, Burke County, was awarded to M. A. Kollock, of Morganton, and the structures to the Padgett-Justice Company, of Rutherfordton. The work consists of 4.89 miles on Route 10 between Glen Alpine and Bridgewater and is estimated to cost \$58,629.

Project 836, Henderson County, consisting of 9.10 miles of grading between Hendersonville and the Buncombe County line was awarded to J. B. Hawkins, of Charlotte, and the structures on the same project to W. M. Brown, of Sylva. For the present only the grading will be done and this, with the structures, is estimated to cost \$145,687.

Project 837-B, Henderson County, consisting of 5.83 miles on Route 29, between Hendersonville and Tuxedo Station, was awarded to the Dixon Contracting Company, of Savannah, Ga. The work consists of placing an asphaltic concrete wearing surface on a reconstructed macadam base course and is estimated to cost \$83,113.

After having been advertised twice, Project 930-A, Graham County, was let to C. M. Dieus, of Topton, for gravel surfacing at an estimated cost of \$12,243. The work includes surfacing on 2.92 miles of highway near the town of Robbinsville.

Interesting Projects *in* Gates County

By P. Y. K. HOWAT, *Resident Engineer*

THE Chowan River, beginning up in Virginia, winds its way south and enters North Carolina at a point about nine miles west of Gates, in Gates County, and then, continuing south about fifty miles, enters the Albemarle Sound at Edenton. Where the Chowan enters North Carolina the River is about 400 feet wide and at Winton it is about 800 feet wide, while at Edenton, where it enters the Sounds, it is nearly two miles wide.

At no point in North Carolina is the Chowan River bridged, and the only crossing is by means of two ferries, one at Winton and one at Colerain. The ferry at Winton is a free ferry maintained by the Highway Commission, while the ferry at Colerain is a toll ferry run by private interests.

The river at Colerain is about a mile wide and is approached on each side by several miles of deep sand county road, which in the summer time is practically impassable. The approaches to the Winton ferry are much more practical. On the west side of the river by two improved State Highways, one from the direction of Jackson and Murfreesboro and the other from Williamston and Ahoskie. These roads converge at Winton and it is at this point that the State Highway Commission is preparing to build a bridge across the Chowan River that will be of even greater practical service than the far-famed Wil-

liamston bridge, for the reason that the Albemarle Sound and the Chowan River together completely cut off six of North Carolina's most fertile counties, making them commercially part of Virginia. This bridge will regain the "lost provinces."

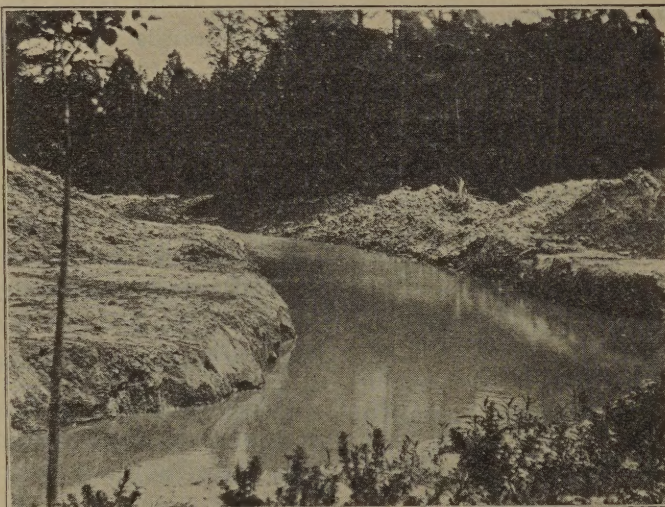
Anticipating the bridge at Winton, the State Highway Commission last August let contracts for the construction of a road from Winton to Gatesville and from Gatesville to Sunbury, and in November let another contract for the construction of a road from Sunbury across the Dismal Swamp to connect with the brick road which runs west ten miles from Elizabeth City. These contracts were divided into three projects, 131, 132 and 133.

Project 131

Starting at Gatesville, the county seat of Gates County and a town of about 300 people, Project 131 runs westerly to Roduco on the Atlantic Coast Line Rail-

road and then to the Chowan River at Winton, a distance of 13.5 miles, thus connecting the county seats of Gates and Hertford counties. A more direct route between the two county seats could have been obtained by way of Eure, also on the Coast Line and about six miles south of Roduco. However, this route would have been almost entirely through heavy sand which would have made maintenance difficult, and also as that route nearly parallels the Chowan River, is more swampy and therefore less thickly settled.

The present contract calls for construction of bridges and culverts, the grading of the roadbed thirty feet wide and topsoiling the graded roadbed with ten inches of topsoil eighteen feet wide. The work was let in two contracts, the structure contract being let to the Murray-Saddler Corp'n of Norfolk, Va., and the grading and topsoil contract to Bacon & Moore, also of Norfolk.



DRAINAGE DITCH ENTERS CANAL

The structures on this project consists of one bridge of three 40-foot reinforced concrete deck girder spans and one bridge of two reinforced concrete deck girder spans and eighteen reinforced concrete box culverts of varying sizes. These bridges offered no unusual construction features. The work of construction was started on August 20, 1922, and actual construction was completed about the first of April, last making a total of 152 working days used;

the contract time was 200 working days.

When the work was started it was planned to ship the material in via the Coast Line Railroad, but inability to secure cars for aggregate shipments necessitated changing this and the bulk of the sand and stone was shipped by barge from Norfolk up the Chowan River and unloaded at the end of the project opposite Winton.

The total cost of the structures on this project was \$34,497.17, an overrun over the estimated cost amounting to 4 per cent, due to greater pile penetration being necessary under the bridges than was estimated.

The estimated cost of the grading and topsoil contract is \$90,000 and consists of about 50 acres of clearing, 25 acres of grubbing, moving about 77,000 cubic yards of common and borrow excavation and placing 35,500 cubic yards of topsoil on the road for surfacing. Cast iron pipe culverts are being used on this project, there being about 1,500 feet necessary.

Except for the last 6,000 feet across the Chowan marshes to the Winton ferry, construction of the roadbed is of the average nature. The Highway in great part follows the old county road except that it is straightened, the grades lowered where necessary and the roadbed graded to 30 feet wide. Beginning at a point 6,000 feet from the Chowan River the Highway enters what is known as the Chowan River Marsh. This marsh is the usual cypress marsh except that it is made more swampy by the continual overflow from the river. A person can stand on a stump or log beside the road in this swamp and push a pole or sapling ten feet or more into the marsh with only the weight of the body.

The right-of-way here is being cleared 90 feet wide and before earth is hauled in to make the roadbed embankment the entire distance between the slope stakes is corduroyed with logs of a minimum diameter of eight inches making a solid mat of logs for the four foot embankment to rest upon. About one-third of this embankment has been completed and to date very little settlement has taken place. It should be noted that the Highway through the marsh follows the old county road built through here over one hundred years ago by slave labor and as this road has been corduroyed at least twice in the past and built up on several occasions it is felt that it will

make a good base for the present highway.

Twenty-seven thousand cubic yards of earth are required to make the embankment over the marsh and the earth is being secured from two "borrow pits" on the comparatively high ground just out side of the marsh. The earth is being hauled in over a narrow gauge track of twenty pound rail in two-yard western side-dump cars. Six of these cars are used and they are pulled by a two-ton Plymouth gasoline "dinkey."

To date work on the project is 31% complete and it is hoped that it will be completed by December 1st of this year.

Project 132

Project 132 starts at Gatesville and runs to Sunbury a distance of 9.72 miles. Sunbury is a town of about two hundred people and is a prosperous agricultural center. The entire contract (both bridges and roadway) was let to J. A. Marrow on August 31, 1922.

The structures consist of one bridge of three 30-foot reinforced concrete deck girder spans and nine culverts

of varying sizes, the largest being a double 8 x 6 feet. The roadway contract calls for grading the roadbed to a width of 30 feet and placing topsoil on the graded roadway 10 inches deep and 18 feet wide.

The total contract price for the structures and roadway is \$58,110. On the roadway there are 30 acres of clearing, 15 acres of grubbing, 67,000 cu. yds. of common and borrow excavation, the usual drainage ditches and 26,000 cu. yds. of topsoil. About 1,600 feet of 15, 18, 24 and 30 inch pipe is being used on the job. The pipe on this project is reinforced concrete.

The alignment of the Highway follows in great part the old county road for a distance of five miles from Gatesville, and then it leaves the county road and strikes across country in a direct line for Sunbury for a saving of two and one-half miles in the present distance between the two towns.

The only difficult feature encountered on this project was during the construction of the footing of the west abutment of the bridge. The bottom of the excavation for this

footing was about six feet below the level of the surrounding swamp and after driving the usual wooden sheet piling the excavation was made with comparative ease. But driving bearing piles (an average of 24 feet penetration was obtained) seemed to loosen a bed of quicksand with the result that when about a month later the cofferdam



ALONG THE GRADE—SHOWING CORDUROY FOUNDATION FOR FILL

was pumped out in order to put in the concrete footing, the bottom of the sheet piling, which was not too well braced, caved in. This was the beginning of no end of trouble which was not ended until the sheet piling was redriven and a four-inch seal course of concrete was laid to shut out the numerous and very healthy sand boils. The usual method of placing a seal course is to allow the excavation to fill with water to its natural height and then pour the concrete through a pipe. In this case this method was impractical because when the excavation filled with water, the bottom also filled with about one foot of quicksand.

Therefore it was necessary to keep the excavation pumped out and to begin at one end of the cofferdam and after excavating to the desired depth (four inches below bottom of footing) to place a layer of roofing paper over the bottom for the width of the cofferdam and about four feet long, and immediately place on top of it the four-inch seal course.

This procedure was carried on in sections of about four feet until the entire excavation was covered. When placed this way the operation was a complete success.

Project 132 is 32% complete and it is hoped that it will be completed in full by November 1st. This project is the second link in the series giving Elizabeth City and the surrounding counties a direct route to the western part of the State.

Project 133

Project 133 begins at Sunbury at the end of Project 132 and runs east across the Dismal Swamp to Jackson's Corner on the brick road 12 miles west of Elizabeth City.

This project is one of the most interesting in the State inasmuch as it crosses the heart of the Dismal Swamp and is the first highway to ever be built across this world famous swamp. The construction of this project is being carried on by two contracts,—the structures being built by the Pittsburg DesMoines Steel Co., of Pittsburg, Pa., and the roadway being built by C. W. Lacy, of Wilmington, N. C.

The structure contract calls for the construction of three single span reinforced concrete through girder bridges and five reinforced concrete box culverts. Then a double 12'x6' on piles. It was originally intended to have twelve culverts but by constructing a canal on the upper side of the roadway for a distance of near-

ly three miles it became possible to eliminate \$7,000 worth of box and pipe culverts.

The Highway leaving Sunbury follows in a general way the old county road for three and one-half miles to Acorn Hill where it leaves the county road and after cutting across fields for about half a mile enters the Dismal Swamp.

The swamp is four miles wide at the point where the Highway crosses and one of the unusual features of this most unusual swamp is that in the entire four miles from bank to bank there is not at any point the slightest indication of any flow of water. Even after heavy rains or in the springtime when the water in places may be two feet deep there is no flow. This would give the impression that the Highway crosses in a basin of the swamp, but if this is so no indication of it can be found for a mile on either side of the line.

Also contradicting the above impression, there is less standing water on the line where the Highway crosses

the summertime one can walk the entire distance, except after hard rains, in shoes and leggings and not get wet—muddy, yes, but not wet.

The line through the swamp is entirely on a tangent and the right-of-way is being cleared 125 feet wide. This is to allow for the 30 foot roadway and a twenty-four foot canal on the left side of the road. The canal is for the double purpose of draining the road and of furnishing material for the roadway embankment. The embankment through the swamp is an average of four feet high. Tests have indicated that the top two feet of earth from the canal will not be acceptable for use in the roadway but that the greater part of the material below that depth will be suitable.

Another of the unusual features of this swamp is that the swamp itself is higher than all of the surrounding country to the east of it and one is treated to the unusual sight of seeing the water in streams running out of the swamp into the cultivated fields to the east, and as one stands on the apparently high ground outside of the swamp and sees the water running toward you out of the swamp it gives the impression of water running up hill. These streams are to the north and south of the Highway.

After leaving the swamp the Highway continues across fields for four miles more until it strikes and follows in a general way the county road through what is known as



THE OLD ROAD

the Tadmore district of Pasquotank County to the Elizabeth City brick road.

The first four miles of the Highway out of Sunbury are built by the usual method of cuts and fills with borrow pits where there is not sufficient earth in a cut to make the adjoining embankment. But from the point where the road enters the swamp to the end of the project at the brick road, the entire roadway is embankment and the necessary earth is secured from a canal along side of the roadway.

On the opposite side of the roadway from the canal a small ditch is run and at intervals of two thousand feet, reinforced concrete pipe culverts are placed under the embankment to run the accumulated water into the canal.

The project will not be surfaced at the present time and it is hoped that the work will be completed about December 31st of this year. The first four miles out of Sunbury has been completed and this work was done with wheelers. The balance of the work is being

Ninth District Engineer Resigns

THE resignation of Wythe M. Peyton, former Ninth District Engineer, which took effect on the first of the current month, removed from the organization of the State Highway Commission one of its most capable engineers and, from length of service, one of its oldest employees. Mr. Peyton's first work with the Commission was from April to December, 1915, when he was employed on work in Caldwell, Mitchell and Avery counties, under the direction of W. S. Fallis, then State Highway Engineer. His next work with the Commis-



sion was following the flood in July, 1916, when he was placed in charge of the reconstruction of the Bat Cave road. This was the first Federal Aid Project authorized in North Carolina. In July, 1918, Mr. Peyton was appointed Division Engineer in charge of work in 22 counties in Western North Carolina and when the Commission was reorganized in 1921 was made District Engineer in charge of 10 counties making up the Ninth District.

Mr. Peyton's professional career began at the age of seventeen as stakeman and rodman on railroad work in

West Virginia. From this time to his connection with the State Highway Commission his experience was largely in railroad and general engineering.

Mr. Peyton is a member of a number of fraternal organizations and is active in civic work in Asheville. He is a national Director of the American Association of Engineers and is active in furthering the welfare of his profession. He is married and has three children.

The resignation of Mr. Peyton was actuated by a desire to enter private practice and an office has been opened in Asheville for this purpose.

Mr. J. C. Walker, formerly in charge of construction in the Ninth District, has been appointed Acting District Engineer to succeed Mr. Peyton. The following resolutions were adopted at the June meeting of the District Engineers of the Commission:

WHEREAS this the 18th day of June, 1923, the District, Construction and Maintenance Engineers of the North Carolina State Highway Commission are now in session at Raleigh, and

WHEREAS we have been appraised of the resignation on July 1, 1923, of Mr. Wythe M. Peyton, District Engineer of the Ninth District, and

WHEREAS Mr. Peyton was one of the first employees on the State Highway Commission and has been in continuous and faithful service from April, 1915 to the present time.

BE IT THEREFORE RESOLVED that we, the State Highway Commission employees here assembled, take this means of expressing our appreciation of his loyal services, our pleasant personal association with him and our sincere regret that he has seen fit to resign his position with us, and

BE IT FURTHER RESOLVED that these resolutions be read before the employees assembled and a copy of same be published in the Highway Bulletin of our organization and that a copy be mailed to Mr. Peyton at Asheville.

LESLIE R. AMES.
JOHN T. WALDROP.
C. S. CURRIER.

Interesting Projects in Gates County

(Continued from page 10)

built with two P & H drag lines, one with a three-quarter yard bucket and the other with a yard and one-half bucket. About two miles of the canal and adjacent embankment has been completed to date.

The total cost of this project which is fourteen miles long will be about \$140,000, including structures and roadway.

The completing of these projects with the construction of the Winton bridge will mean more to the State of North Carolina than any other road project in the State. Think what it means. Six counties cut off from the rest of the State by an unbridged river, and three of these counties with a town of twelve thousand people, the largest town in northeast North Carolina, doubly cut off by not only the river but by the world famous Dismal Swamp, and then after centuries of isolation to be given a straight road to the heart of the State.

Blowing Rock Turnpike Under Construction

By MACON M. WILLIAMS, *Resident Engineer*

DURING the winter and early Spring months the Maintenance Department regraded a portion of the turnpike leading out of Lenoir, but did not surface it. At first it was thought that a penetration macadam surfacing would be placed on this new grade, but the public demanded that some kind of surfacing be put down this summer. It was impossible to build a hard surface road and keep the traffic on the turnpike going at the same time, so it was decided to put down a one course gravel surfacing.

The contract for the gravel surfacing of eleven miles of the turnpike was let on April 28th to J. F. Mulligan Construction Company, of North Wilkesboro, N. C. In letting this contract the contractor was told emphatically that the first two miles of this project must be completed by the first of June. The specifications for the gravel surfacing called for a thickness of ten inches on the new grade and six inches where it was placed on old subgrade.

The first two miles of this contract began at the city limits of Lenoir and all of it was on fresh fills and cuts. The grading had been done with a steam shovel and wagons. The cuts were deep and the trees from the hillsides shaded the road all during the day. The road is a series of reverse curves which makes it very hard to get the sun on the road in deep cuts. The cuts were all of rotten soap stone rock and lifeless dirt, and most of the fills were placed on a blue mud bottom. When it rained it was almost impossible for the cars and trucks to pass, for they would soon cut into this poor subgrade and with their axles dragging the ground would be stuck until a State tractor came to the rescue and pulled them out.

On May 1st the Chief Engineer gave orders to the contractor, and to the District Engineer who relayed them to the Resident Engineer, that this bad stretch of road must be done away with by the first of June. The contractor started to work on May 2nd putting up a dump trap, getting trucks and a wheeler outfit on the job. On May 7th the first hundred feet of surfacing was placed on the road with the use of three White trucks rented from the State and May 8th two Republic dump body trucks arrived. On May 9th the Maintenance Department turned over a steam shovel and two Packard trucks to the contractor for temporary use. A little later two other White trucks arrived. This gave nine trucks to use on an average haul from pit to road of four miles.

The first two weeks everything went well, for the forces were organized and the contractor surfaced 53 stations, or half of what was to be completed by the first of June.

Monday of the third week it began raining and continued until Wednesday night. All during this time the surfacing was cutting into deep ruts because it had not had time to set up. The soft gravel only made the ruts deeper. Something had to be done to let the traffic through this stretch of road.

Word had been that on Saturday of this week one hundred cars would pass through from Hickory to Blowing Rock carrying Reformed Church preachers from all over the United States and Canada. All forces were put to work. In the very bad places the gravel was machined to each side of the road and rock base put on the subgrade with the old gravel used as a shoulder. On top of this base we placed two to three inches of gravel. Two road machines and two drags were kept going all the time, dragging the road and turning the gravel up to the sun so that it would dry out. By the end of the week the road was put in good condition, but fearing that the road would cut up over the week end arrangements were made to keep two machines running all day Sunday so that the turnpike would be in good condition for the heavy Sunday traffic.

On the 13th of June the two miles were completed and all signs of mud and deep ruts were gone. The heavy summer traffic was just beginning, but through the co-operation of the Construction Superintendent with the Engineer this stretch of road has been put in good shape and no one will have cause to complain about mud and deep ruts on this road. In one month's time a sea of mud was transformed into a hardened gravel road capable of carrying traffic with complaints from no one. Those who have watched the work as it has progressed during the month—remembering the muddy subgrade and the time the work was started—now marvel at what can be accomplished in the road building game in a short period of time. Instead of deep ruts the two miles was changed into a smooth gravel road in 23 working days.

On this part of the road we put on a six inch course of straight pit run gravel without being crushed or graded. The road was machined and the larger stone thrown to the side. This stone was later used in the places where a base course was necessary. On top of this course we will place a four inch course of crushed stone with enough fine aggregate to bond the stone.

The other nine miles of the project will be surfaced with a six inch course of crushed stone and fine gravel. All this material is taken from gravel pits in the Yadkin River bottoms. It is hoped that the entire eleven miles can be completed during the Summer. Which will give a well surfaced road from Lenoir to the foot of the mountain leading to Blowing Rock.

STATUS OF STATE WORK IN NORTH CAROLINA

Projects Under Construction

NO.	COUNTY	LENGTH	TYPE	ESTIMATED COST	BEGUN	CONTRACTOR
101	Beaufort.....	4.23	P. C.	\$ 145,492.76	1-20-23	Public Service Production Co.
105A	Beaufort.....	2.00	P. C.	78,839.42	11-11-22	J. L. McGhee Cont. Co.
105B	Beaufort.....	5.037	P. C.	164,301.61	1-19-23	Public Service Production Co.
106	Bertie.....	7.12	T. S.	58,204.90	9-11-22	J. F. Mulligan Const. Co.—Boney & Hostetler.
107	Bertie.....	19.30	Graded	50,127.00	3-14-23	Nello Teer—Atlantic Bridge Co.
110	Camden.....	2.71	R. C.	134,866.48	7-11-22	State Forces
113B	Chowan.....	9.89	S. A.	100,000.00	4-9-23	State Forces.
115	Chowan- Perquimans.....	11.83	P. C.	326,304.00	5-15-23	Smith Brothers, Inc.
129	Edgecombe.....	8.1	Graded	40,850.00	9-14-22	State Forces
131	Gates.....	15.95	T. S.	135,515.60	8-22-22	Bacon & Moore—W. D. Murray—Sadler Corp.
132	Gates.....	10.90	T. S.	63,921.00	8-29-22	J. A. Marrow.
133	Gates-Pasquotank.....	14.07	Gravel	138,045.77	11-7-22	C. W. Lacy—Pittsburg Des Moines Steel Co.
137	Halifax.....	5.95	Bit Mac	180,441.92	11-21-21	O. F. Leighton—A. C. House.
138A	Halifax-North- ampton.....	12.59	& P. C. S. C.	131,712.13	5-1-22	Nello Teer—Richards Bros.
138B	Northampton- Halifax.....		Bridge	347,188.74	2-28-23	Pensacola Shipbuilding Co
145	Hertford.....	12.88	Graded	88,161.42	7-31-22	Jameson & Bro.—Atlantic Bridge Co.
147	Hertford-Bertie.....	17.36	Graded	122,245.86	3-5-23	Nello Teer—Atlantic Bridge Co.
151	Hyde.....	4.30	T. S.	71,422.28	12-10-21	C. W. Lacy—Porter & Peck.
152	Hyde.....	10.89	S. C.	75,651.40	1-15-23	O. A. Mann & Co.
154	Martin.....	11.27	A. C.	394,153.29	4-17-22	Sou. Willite Paving Co.—O. F. Leighton, Inc.
155	Martin-Pitt.....	20.01	T. S.	98,176.65	1-9-22	J. P. Dicus—J. M. Gregory.
155B	Martin.....	19.3	P. C.	493,900.40		W. T. Hadlow.
157A	Martin.....	12.50	T. S.	85,813.86	10-18-22	Jamison & Bro.—J. A. Marrow.
157B	Martin.....	12.50	T. S.	90,396.24	11-13-22	J. F. Mulligan Constr. Co.—Batson Cook Co.
159	Nash.....	11.22	T. S.	89,942.43	1-2-22	J. A. Kreis & Co.
163 ^(F A)	Nash.....	14.96	P. C.	409,592.40	6-15-23	Public Service Production Co.
167 ⁽¹⁴⁹⁾	Northampton.....	20.48	T. S.	92,444.11	7-17-22	Virginia Contr. Co.—Bacon & Moore.
173	Perquimans-Pas- quotank.....	7.22	R. C.	239,444.70	8-25-22	Williams & Williams.
174	Pasquotank-Cam- den.....	2.40	Cord	55,818.01	4-3-22	D. E. Williams.
183A	Pitt.....	13.54	P. C.	399,854.40	11-13-22	S. J. Groves & Sons.
183B	Pitt.....		Bridge	32,343.30	3-27-22	B. J. Boyles.
184	Pitt.....	7.14	P. C.	206,516.42	11-21-22	Public Service Production Co.
185	Pitt.....	14.35	Graded	31,069.72	3-29-22	J. A. Marrow.
191	Tyrrell.....	6.91	S. C.	58,594.41	1-20-22	C. W. Lacy—M. M. Jones.
195	Washington.....	15.18	S. C.	65,619.35	2-28-22	L. M. Lee & Co.—B. J. Boyles.
196	Washington.....	14.93	S. C.	83,632.78	5-15-22	W. N. Thompson.
200	Carteret.....	13.68	Graded	79,629.00	7-21-22	Eagle Eng. Co.—Batson-Cooke Co.
201	Carteret.....	14.14	Graded	81,652.62	1-17-23	Duplin Constr. Co.—Batson Cooke Co.
210	Craven.....	8.34	A. C.	292,698.06	4-3-22	West Construction Co.—A. P. Gilbert.
219	Duplin-Lenoir.....	15.60	Graded	148,339.29	6-1-21	Chitwood & Carpenter.
220	Wayne-Duplin.....	14.53	A. C.	394,301.05	2-27-23	Union Paving Co.
236 ^(F A)	Johnson.....	14.83	A. C.	475,321.55	10-2-22	R. G. Lassiter & Co.
245 ⁽¹⁴³⁾	Jones.....	15.67	P. C.	265,179.53	3-22-22	Hyde & Baxter.
254	Lenoir.....		Bridge	73,415.32	11-22-22	Roanoke Iron & Bridge Co.
256	Lenoir.....		Bridges	57,680.00	1-11-23	Englehardt-Kuehen.
263	Pamlico.....	12.03	A. C.	289,324.20	3-27-22	Union Paving Co.
264	Craven-Pamlico.....		Bridge	27,156.25	7-24-22	Rhyne & Kitchen.
272	Sampson.....	16.47	Graded	98,807.39	6-19-22	R. E. Martin—Striblin—Staudy & Newell.
273	Sampson.....	2.44	P. C.	96,916.82	2-27-23	Eagle Engineering Co.
275	Sampson.....		Bridges	8,769.74	4-4-23	Rhyne & Kitchen.
282	Wayne.....	14.22	A. C.	398,168.00	11-11-22	Union Paving Co.
291	Wilson.....	7.63	A. C.	203,498.18	1-17-22	P. R. Ashby.
291B	Wilson.....		Bridges	12,990.23	4-4-23	Jno. M. Ogden & Co., Road not let.
294	Wilson.....		Bridge	15,770.80	11-29-22	Stearns Bros.
300	Bladen.....	11.99	S. C.	64,911.71	4-8-22	T. W. Chandler—Nello Teer.
301	Bladen.....	13.17	T. S.	82,028.21	11-21-21	J. F. Mulligan—Powell Paving & Const. Co.
312	Brunswick.....	9.77	P. C.	347,319.68	7-5-22	Alabama Conc. Prod. Co.—Batson-Cooke Co.
313	Brunswick.....	3.44	A. C.	105,706.65	3-15-22	Sou. Willite Paving Co.—Roanoke Bridge & Iron Works.
314	Brunswick.....	15.82	S. C.	109,259.10	2-23-22	Hagedorn Const. Co.
316	Brunswick.....	12.12	S. C.	80,068.72	8-14-22	B. Frank Price—Batson, Cooke Co.
317	Brunswick.....		Bridge	19,783.20	11-30-22	Atlantic Bridge Co.
325	Columbus.....	11.22	T. S.	105,530.04	11-3-21	J. A. Kreis-Cornell-Young Co.
326	Columbus.....	13.61	S. C.	195,838.19	5-23-22	J. T. Plott—J. A. Kreis & Co.
327	Columbus.....	5.2	S. C.	38,269.44	6-21-22	J. A. Kreis.
328	Columbus.....	7.03	P. C.	219,371.68	12-26-22	L. L. Tindall
340	Cumberland.....	11.07	P. C.	381,032.02	6-15-22	Alabama Conc. Prod. Co.—Hobbs & Peabody.
342	Cumberland.....	5.91	A. C.	177,402.50	10-30-22	A. J. Wardrep.
351	New Hanover.....	10.64	A. C.	189,540.00	1-8-23	Southern Willite Paving Co.
363	Onslow.....	15.24	T. S.	208,476.95	3-5-23	Newell Constr. Co.—Pittsburg-Des Moines Steel Co.
364A	Onslow.....	9.95	S. C.	44,631.40	3-14-22	R. E. Martin.
364B	Onslow.....	12.84	T. S.	99,819.50	6-26-22	A. W. McClay.
376	Pender.....	7.64	Graded	94,757.85	11-11-21	C. G. Kershaw Const. Co.—Cornell Young Co.

STATUS OF STATE WORK IN NORTH CAROLINA---Continued

Projects Under Construction (Continued)

NO.	COUNTY	LENGTH	TYPE	ESTIMATED COST	BEGUN	CONTRACTOR
377	Pender-Duplin....	1.61	S. C.	\$ 76,985.70	3-22-22	R. E. Martin-Hazell-Conerat-Quist Co.
378	Pender.....	14.12	W. B. Mac.	213,502.96	7-19-22	C. W. Lacy.
379	Pender.....	10.00	S. A.	100,000.00	5-22-22	State Forces.
380	Pender.....	8.98	W. B. Mac.	162,212.60	3-6-23	C. W. Lacy.
386-87	(F A-140) Robeson	19.8	P. C.	647,888.05	9-4-22	James O. Heyworth.
389	Robeson-Colum...	1.56	T. S.	83,463.38	10-26-21	L. A. Chitwood.
391A	Robeson.....	1.01	S. A.	43,332.08	4-3-23	R. G. Lassiter
391B	Robeson.....	1.10	T. S.	17,433.00	2-26-23	H. M. Beasley.
392	Robeson.....	1.06	T. S.	24,937.00	5-1-23	Robeson Co., Com.—E. T. Gwathney.
402	Chatham.....	6.92	T. S.	33,940.28	8-1-22	W. N. Thompson.
403	Chatham.....	7.01	T. S.	66,814.00	2-27-23	C. G. Kershaw.
411	Durham.....	5.81	P. C.	211,574.92	9-15-21	Hutton Eng. & Const. Co.
412	Durham.....	8.80	P. C.	252,582.00	11-15-22	L. L. Tindall.
419	Franklin.....	12.82	T. S.	63,021.97	7-27-22	Jamison Bros.—J. M. Gregory.
428	Granville.....	4.19	R. C.	142,637.77	7-14-22	Pittman Const. Co.
429	Granville.....	6.94	P. C.	261,393.00	3-21-23	R. B. Sandidge.
437	Harnett.....	10.74	Gravel	101,031.26	5-8-23	F. P. Holder—T. J. Newell.
456	Orange.....	9.81	Graded	37,459.07	1-7-22	Crawford & Crawford—Nello Teer.
457A	Orange.....	7.45	Graded	75,398.67	4-12-23	Dicus Bros.—Richards Bros.
460	Orange.....	9.87	A. C.	296,835.55	9-25-22	R. M. Hudson & Co.
463	Person.....	11.24	P. C.	327,171.35	8-14-22	Porter & Boyd.
473	Vance.....	7.83	P. C.	265,546.60	7-11-22	R. G. Lassiter & Co.
481	Wake.....	7.40	A. C.	254,995.34	1-24-22	Union Paving Co.—P. R. Ashby.
484	Wake.....	8.79	P. C.	311,590.40	8-23-22	P. R. Ashby-Booz-Lloyd & Co.
485A	Wake.....	7.35	Graded	92,818.00	5-4-23	C. G. Kershaw Construction Co.—T. J. Newell.
486	Wake.....	9.04	T. S.	41,074.00	4-11-23	O. A. Mann & Co.
492	Warren.....	4.48	Bit Mac	100,436.13	4-10-22	Porter & Peck—A. C. House.
493	Warren.....	3.39	Bit Mac	77,866.80	7-27-22	Porter & Peck.
494	Warren.....	6.21	A. C.	208,130.01	9-6-22	Clifford Engineering Co.
502	Alamance.....	17.43	T.S. & B.M.	138,629.97	7-17-22	W. E. Graham—Hanford Bros.
503	Alamance.....		Bridge	59,450.38	7-17-22	Atlantic Bridge Co.
512	Caswell.....	11.67	T. S.	54,375.53	2-19-23	J. T. Plott.
525	Davidson.....	10.24	A. C.	363,850.08	12-23-21	Elliott & Sons & Boggs—Austin Bros. Bridge Co.
528	Davidson.....	10.24	P. C.	427,511.92	10-2-22	Hagedorn Constr. Co.—J. A. Peterson.
532	Guilford.....	11.70	A. C.	385,957.88	2-1-22	Elliott-Sholes Co.
532B	Guilford.....		Bridges	24,730.00	1-5-23	L. M. Lowdermilk.
533	Guilford-Forsyth...	10.59	P. C.	427,997.62	7-11-21	Royer-Ferguson Const. Co.
535	Guilford.....	7.78	R. C.	277,955.21	4-19-22	Leaksville Lumber Co.
545	Hoke.....	9.15	T. S.	58,195.06	6-5-22	O. A. Mann & Co.—A. W. McClay.
555	Montgomery.....	20.55	T. S.	103,708.00	2-19-23	Mayfield Construction Co.—F. P. Holder.
566	Moore.....	7.14	T. S.	62,079.21	3-6-22	Gibson Const. Co.—Nello Teer.
569	Moore.....	18.97	S. C.	97,151.45	8-1-22	Mayfield Const. Co.
570	Moore.....	22.70	T. S.	90,804.33	5-22-23	A. B. McDonald.
577	Randolph.....	13.77	P. C.	422,343.57	4-18-22	Royer-Ferguson Co., Inc.—J. L. Brinkley.
578	Randolph.....	7.91	P. C.	308,537.68	5-10-23	Allport Construction Corporation.
588	Rockingham.....	7.98	R. C.	266,498.43	4-11-22	Cheatwood & Driscoll.
589	Rockingham.....	9.81	P. C.	324,975.31	10-30-22	Cheatwood & Driscoll—Atlantic Bridge Co.
590	Rockingham.....	2.10	P. C.	66,062.18	6-15-23	Geo. R. Martin
593	Rockingham-Cas-					
	well.....	17.98	P. C.	525,393.22	7-11-22	J. A. Kreis.
600	Alexander.....	9.3	Graded	12,530.98	5-26-22	Bolton Construction Co.
602	Alexander.....	9.28	Bit Mac	189,329.80	10-9-22	W. E. Graham
606	Stanley-Anson.....		Bridge	54,759.32	3-23-22	Concrete Steel Bridge Co.
607	Anson.....	6.39	T. S.	37,098.91	3-21-22	Geer & Wilson—Booz-Lloyd & Co.
608	Anson.....	7.88	A. C.	345,408.58	9-27-22	Lampton & Burks—J. A. Peterson.
614	Cabarrus.....	9.20	P. C.	350,085.07	7-21-22	A. L. Harris—Oliver & Costello Bros.
615	Cabarrus.....	3.88	A. C.	98,741.17	3-9-23	Thompson-Caldwell—Atlantic Bridge Co.
616	Cabarrus.....	8.59	Gravel	46,024.00	4-12-23	Lee J. Smith—L. M. Lefler.
622	Catawba.....	10.85	A. C.	354,321.44	1-23-22	Union Paving Co.
629	Catawba.....	7.52	P. C.	268,662.48	6-5-22	A. L. Harris—R. M. Thurmond & Co.
630B	Gaston.....	6.65	A. C.	218,625.00	8-8-22	W. F. McCannless, Hobbs-Peabody Constr. Co.
632	Gaston.....	8.50	R. C.	291,868.94	1-2-22	Davis-Wilcox Const. Co.
633B	Gaston.....	3.8	A. C.	57,247.41	1-6-23	Gaston County.
639	Iredell.....	10.59	A. C.	387,346.19	1-2-22	R. M. Hudson Co.—Luten Bridge Co.
640	Iredell.....	8.17	Bit Mac	181,990.82	9-26-22	W. E. Graham.
643	Iredell.....	8.57	A. C.	321,614.81	5-21-23	Stearns Brothers.
647	Lincoln.....	7.10	P. C.	250,108.15	6-5-22	A. L. Harris—R. M. Thurmond & Co.
653	Mecklenburg.....	8.84	A. C.	308,732.43	2-28-22	Union Paving Co.—Luten Bridge Co.
654	Mecklenburg.....	10.1	A. C.	302,887.09	4-3-22	Lampton & Burks.
658	Mecklenburg.....	9.55	A. C.	266,758.80	10-9-22	Union Paving Co.
659	Mecklenburg.....	7.93	Graded	36,650.00	4-9-23	County Commissioners—Luten Bridge Co.
661	Richmond.....	9.76	T. S.	40,683.41	7-18-22	McDonald & Brooks.
665	Richmond.....	5.77	A. C.	194,501.23	7-28-22	A. J. Wardrep.
670	Cabarrus-Rowan..	4.53	P. C.	142,221.53	6-29-22	Harris Construction Company.
671	Rowan.....	7.34	A. C.	309,262.14	3-20-23	Thompson-Caldwell Construction Co.—Atlantic Bridge Co.

STATUS OF STATE WORK IN NORTH CAROLINA---Continued

-Projects Under Construction (Continued)

NO.	COUNTY	LENGTH	TYPE	ESTIMATED COST	BEGUN	CONTRACTOR
673	Davidson-Rowan..	.59	Bridge	\$ 221,353.00	9-19-22	Hardaway Contracting Co.—Elliott & Sons.
677	Scotland-Robeson..	7.11	R. & P. C	283,460.61	4-26-22	P.R. Ashby—J. B. Murphy.
691	Union.....		Bridge	14,520.00	2-13-23	J. S. Brinkley.
694	Union.....		Bridge	23,549.13	11-14-22	Hagedorn Construction Co.
696	Union.....	6.05	A. C.	139,901.30	1-30-23	Redmon Construction Co.
700	Alleghany.....	7.90	W. B. Mac	132,297.33	6-23-21	W. E. Graham.
701	Alleghany-Wilkes..	8.00	W. B. Mac	166,245.20	6-16-21	W. E. Graham.
702A	Alleghany.....	7.75	Bit Mac & Gravel	209,188.98	10-31-22	O'Brien Constr. Co.—Luten Bridge Co.
711	Ashe.....	6.50	Gravel	60,000.00	9-7-22	Little Contracting Co.
712	Ashe.....	11.06	Gravel	197,687.38	10-24-22	J. T. Plott.
713 ^(FA)	Ashe.....	3.53	P. C.	166,595.00	8-22-22	Overstreet & Nance—Concrete Steel Bridge Co.
724	Caldwell.....	4.66	T. S.	51,890.66	5-8-22	County Road Commrs—R. M. Thurmond & Co.
726	Caldwell.....	11.6 ⁿ	Gravel	50,000.00	5-5-23	State Forces.
726A	Caldwell.....					J. F. Mulligan Construction Co.
731	Davie.....	5.46	P. C.	195,393.11	3-13-22	G. R. Martin-Heilig & Sherrill.
741	Forsyth.....	8.90	P & R. C.	315,025.81	7-27-22	Hardaway Construction Company.
742 ^(FA)	Forsyth.....	10.62	R. C.	413,067.27	6-20-22	Harris Construction Co.
743	Forsyth.....	11.35	A. C.	414,085.43	4-2-23	Atlantic Bitulithic Co.
744	Forsyth.....	2.00	T. S.	*	1-11-22	Forsyth County.
750	Stokes.....	14.86	T. S.	93,054.48	9-15-21	J. F. Mulligan Const. Co.—Lee J. Smith.
752	Stokes.....	9.67	T. S.	124,874.75	2-17-23	W. E. Graham.
761	Surry.....	2.22	P. C.	77,334.01	11-22-22	Geo. R. Martin.
765	Surry.....	3.40	P. C.	112,685.76	10-24-22	Campbell Constr. Co.
770A	Watauga.....	5.90	Bit-Mac.	40,000.00	8-12-22	State Forces.
770B	Watauga.....	2.90	Gravel	93,500.00	4-16-23	State Forces.
771A	Watauga.....	2.50	Bit. Mac	30,000.00	9-7-22	State Forces.
771B	Watauga.....	13.50	Gravel	35,000.00	9-7-22	State Forces.
780	Wilkes.....	7.83	Recon	25,000.00	7-25-21	J. F. Mulligan.—State Forces.
781	Wilkes.....	14.50	Recon	154,000.00	7-25-21	J. F. Mulligan.—State Forces.
782	Wilkes.....	5.97	R. C.	184,614.65	3-29-22	Hyde & Baxter.
783	Wilkes-Watauga..	36.00	Gravel	174,900.00	9-2-21	Chandler & Ragland
784	Wilkes.....	4.97	T. S.	85,966.21	8-30-22	J. F. Mulligan Constr. Co.—Foster Constr. Co.
785	Wilkes.....	2.52	P. C.	78,703.50	4-2-23	J. D. Brookshire & Co
790	Yadkin.....	10.12	P. C.	330,254.27	4-24-22	Pittman Construction Co.
800	Avery.....	5.84	Grav & R C	198,827.02	7-31-22	O'Brien Const. Co.—J. A. Kreis.
811	Burke.....	5.24	P. C.	185,132.97	1-13-22	Southern Dray Co.
815	Burke-Cleveland-Lincoln	11.63	T. S.	153,126.60	4-28-22	Geer & Wilson—J. L. Van Glahn.
821 ^(FA)	Cleveland.....	1.58	P. C.	60,192.33	10-31-22	Davis-Wilcox Constr. Co.
822 ^(FA)	Cleveland.....	10.47	A. C.	404,444.48	9-27-22	Elliott & Sons—J. A. Kreis & Co.
833	Henderson.....	5.20	Gravel	34,952.94	1-3-22	S. L. Davis Const. Co.—Asheville Const. Co.
835	Henderson.....	6.97	W. B. Mac	281,162.75	6-9-23	J. B. Ross, Jr.—R. C. Stevens.
846	McDowell.....	10.06	Gravel	204,680.74	9-22-21	Asheville Const. Co.—W. T. Taylor Const. Co.
847	McDowell.....	3.84	Graded	91,217.50	10-19-22	C. W. Lacy—Oliver & Costello Bros.
848	McDowell.....		Bridge	18,597.04	11-21-22	R. M. Thurmond & Co.
856	Mitchell.....	6.88	Bit Mac	239,343.83	3-20-22	Porter & Boyd—L. J. Chandler & Co.
858	Mitchell.....		Bridge	42,367.49	10-2-22	R. M. Thurmond & Co.
860	Mitchell.....	5.65	W. B. Mac	152,908.42	4-21-22	J. F. Mulligan—W. H. Anderson Const. Co.
876 ^(FA)	Rutherford.....	4.80	P. C.	146,264.80	10-30-22	Fiske-Carter Construction Co.
882	Rutherford.....	15.80	T. S.	105,210.61	9-20-22	C. R. Willard & Sons—Michaux Const. Co.
888	Yancey.....	15.22	W. B. Mac	230,499.94	10-10-22	The Luck Co.
901 ^(FA)	Buncombe.....	7.52	P. C.	354,082.45	11-6-22	R. C. Stephens—A. J. Wardrep
903	Buncombe.....	2.58	A. C.	100,399.47	4-10-22	Asheville Paving Co.—R. C. Stevens.
911	Cherokee.....	10.33	Gravel	144,991.44	10-25-21	H. A. Wells—Southern Dray Co.
913	Cherokee.....	10.33	W. B. Mac	95,554.80	8-8-22	Mills, Williams Construction Company.
920	Clay.....	5.01	Gravel	50,716.66	1-9-22	E. A. Wilson & Co.—W. T. Moore Conc. Prod. Co.
921	Clay.....	12.37	Gravel	99,988.02	10-24-21	Lee J. Smith Const. Co.—W. T. Moore Conc. Prod. Co.
930	Graham.....	12.90	Gravel	143,574.20	10-15-21	Lee J. Smith Const. Co.—C. M. Dicus.
940	Haywood.....	7.13	W. B. Mac	126,069.30	4-14-22	Alexander & Patton—H. A. Brown & Co.
944 ^(FA)	Haywood.....	10.18	A. C.	409,683.45	5-14-23	A. J. Wardrep.
950	Jackson.....	7.56	Gravel	145,313.30	6-13-21	Wright & Nave—O'Brien Const. Co.
951	Jackson.....	11.85	W. B. Mac	249,546.00	8-17-22	R. H. Wright & Sons—W. T. Moore Conc. Prod. Co.
952A	Jackson.....	10.35	Graded	164,126.60	8-17-22	Brooks-Calloway Company.
953	Jackson.....	12.72	Graded	118,186.75	7-1-22	C. C. McCabe.
954	Jackson.....	1.68	P. C.	90,871.77	7-1-22	Mills, Williams Construction Company.
960	Macon.....	4.97	S. C.	69,100.57	6-6-21	J. T. Plott—J. E. Lane & Co.
961	Macon.....	4.77	T. S.	58,340.59	12-5-21	J. T. Plott—J. E. Lane & Co.
962	Macon.....	13.58	W. B. Mac	171,200.05	4-24-22	O'Brien Const. Co.—Griffin Const. Co.
963	Macon.....	8.68	Graded	124,354.01	11-10-22	Costello Bros.—Brooks-Calloway Co.
970	Madison-Yancey..	13.80	W. B. Mac	218,940.17	11-11-21	R. H. Wright & Sons—O'Brien Const. Co.
971	Madison.....	6.74	Gravel	114,026.00	4-23-23	Reynolds Const. Co.—Moore Concrete Prod. Co.
972	Madison.....	7.00	Graded	9,000.00	4-6-23	State Forces.
980	Macon-Swain.....	17.84	W. B. Mac	350,175.11	3-20-22	Costello Bros.—Condon & Condon.
990	Transylvania.....	8.87	W. B. Mac	151,238.89	6-5-22	Sam L. Davis Const. Co.—R. C. Stevens.
991	Transylvania.....	7.03	Graded	156,653.20	3-6-23	Gibson Construction Co.

*Built by county.

STATUS OF STATE WORK IN NORTH CAROLINA---Continued

Projects Completed

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	COMPLETED	CONTRACTOR
100	Beaufort.....	10.50	R. C.	\$ 369,777.70	3-15-23	W. T. Hadlow
103	Beaufort.....	.03	R. C.	1,706.75	7-3-22	R. G. Lassiter.
113	Chowan.....	10.32	Graded	39,743.33	3-1-23	Nello Teer—Gregory & Talbot.
114	Chowan.....	10.40	Graded	45,064.09	4-14-23	Battershill & Goode—Chandler & Ragland.
125	Edgecombe.....	15.11	A. C.	426,438.76	4-23-23	R. G. Lassiter.
139	Halifax.....		Bridge	*20,425.59	8-25-22	Chandler & Ragland—Porter & Peck.
140	Halifax.....		Bridge	*11,043.05	5-5-22	Von Glahn & Talbott.
160	Frklin.-Wake-Nash	8.93	T. S.	53,722.95	3-7-23	Chandler & Ragland—Southern Dray Co.
166	Northampton.....	.47	Bridge	17,954.75	9-14-22	W. D. Murrey—Sadler Corp.
175	Pasquotank.....	9.50	Brick	217,405.72	4-19-23	County Commissioners.
186	Pitt.....	9.57	R. C.	*248,103.78	8-5-22	Cheatwood & Driscoll.
209	Craven.....	2.65	P. & R. C.	*114,569.02	2-15-22	Eagle Engineering Co.
211	Craven.....	9.93	A. C.	288,946.02	5-16-23	Union Paving Co.
218	Wayne-Duplin.....	16.06	Graded	92,589.58	2-24-23	C. W. Lacy.
227	Greene.....	6.81	A. C.	239,797.80	1-25-23	West Construction Co.—Union Paving Co.
255	Lenoir.....	0.82	S. A.	30,384.89	8-18-22	West Construction Co.
280	Wayne.....	10.01	A. C.	311,352.36	5-12-23	Union Paving Co.
281	Wayne.....		Bridge	*21,225.49	1-15-23	P. R. Ashby.
338	Cumb.-Samson.....		Bridge	26,323.99	9-26-22	Roanoke Bridge & Iron Works.
339	Harnett-Cumb.....	754	T. S.	19,067.28	8-31-22	Porter & Boyd
341	Cumb.-Hoke.....	.2	Graded	*1,042.55	2-28-22	W. B. Covington
375	Pender.....	13.56	S. C.	68,830.09	11-21-22	A. W. McClay
388	Robeson.....	3.35	R. C.	137,009.40	9-28-22	C. W. Lacy—Roanoke Bridge & Iron Co.
400	Chatham.....		Bridge	57,420.22	5-18-23	R. M. Walker & Co.
409	Durham.....	0.5	Graded	*5,409.10	8-7-22	J. P. Dicus.
410	Durham.....	2.3	R. C.	*81,105.75	9-28-22	C. D. Riggsbee.
420	Franklin.....	1.56	R. C.	55,421.30	5-29-23	Chandler & Ragland.
427	Granville.....	5.12	A. C.	178,257.64	1-4-23	R. G. Lassiter & Co.
436	Harnett.....	21.91	Gravel	202,563.88	1-15-23	C. G. Kershaw Const. Co.—Hobbs & Kitchen.
445	Lee.....	5.91	T. S.	18,692.85	1-15-23	C. B. Hester.
446	Lee.....	5.90	A. C.	197,188.22	1-15-23	Atlantic Bitulithic Co.—O. A. Mann & Co.
453	Orange.....		Bridge	33,706.80	1-9-23	Geo. W. Kane.
454	Orange.....	4.28	P. C.	197,675.32	3-6-22	Elliott, Sholes & Teer.
455	Orange.....	4.19	T. S.	*55,214.44	9-28-22	J. F. Mulligan Const. Co.—P. R. Ashby.
482	Wake.....	6.64	A. C.	*184,393.31	9-23-22	R. M. Hudson Company.
483	Wake.....	0.54	R. C.	*15,630.74	8-7-22	C. D. Riggsbee.
500	Alamance.....	5.22	Graded	*36,844.34	1-17-22	W. W. Tuck & Son—A. M. Hazell, Connerate—Quist Construction Co.
501	Alamance.....	13.1	T. S.	30,927.27	2-28-23	W. M. Shook—Hanford Bros.
504	Alamance.....	5.22	A. C.	154,127.16	5-3-23	Elliot & Sholes.
505	Alamance.....	0.42	S. A.	*15,229.74	6-23-22	Hedrick Construction Co.
511	Caswell.....	14.80	T. S.	73,242.18	10-11-22	White & Simpson—C. B. Hester
524	Davidson.....	0.3	S. A.	*9,941.54	1-20-22	Town of Lexington.
525A	Davidson.....	.5	S. A.	*16,419.86	6-27-21	Town of Lexington.
526	Davidson.....	3.77	P. C.	*131,269.66	10-25-22	Hagedorn Constr. Co.—Heilig & Sherrill.
538	Guilford.....		Bridge	7,039.01	2-21-23	J. L. Brinkley.
539	Guilford.....	0.64	S. A.	21,639.20	1-19-23	Robt. G. Lassiter & Co.
540	Guilford.....	18.00	Recon.	16,527.54	1-23-22	J. T. Plott.
544	Hoke.....	10.45	S. C.	32,445.49	5-3-23	O. A. Mann & Co.—Chitwood & Carpenter.
546	Hoke.....	0.84	S. A.	27,949.00	5-30-23	Dawkins Construction Co.
567	Moore.....	2.96	T. S.	*9,967.53	9-18-22	C. E. Teague.
601	Alexander.....	3.07	T. S.	33,630.45	3-31-23	Guss Ginn—R. M. Thurmond
630A	Gaston.....	3.02	A. C.	*98,854.41	7- -22	W. F. McCanless.
633A	Gaston.....	13.77	A. C.	180,000.00	10-5-22	Gaston County
634	Gaston.....		Bridge	4,500.00		State Forces.
638	Iredell.....	7.88	A. C.	262,142.65	1-20-23	Thompson-Caldwell Co.
652	Mecklenburg.....		Bridge	1,923.28	10-30-22	State Forces.
655	Mecklenburg.....	1.57	P. C.	63,695.17	7-31-22	Speed-Parker Co., Inc.—Luten Bridge Co.
656	Mecklenburg.....	10.4	Bit.-Mac.	200,000.00	10-30-22	State Forces.
657	Mecklenburg.....	13.80	Recon.	20,000.00	10-30-22	State Forces.
692	Union.....	2.28	A. C.	*65,279.20	12-28-21	Redmon Construction Co.
693	Union.....	1.14	Gravel	3,324.48		Sykes-Collins Co.
695	Union.....	4.51	A. C.	*138,738.07	9-14-22	Redmon Construction Co.
710	Ashe.....	3.14	P. C.	*142,707.93	8-17-22	Pittman Construction Co.
719	Caldwell.....		Bridge	*7,906.87	6-26-22	Cottrell & Howard.
719B	Caldwell.....	.99	Gravel	1,665.33	11-15-22	J. G. Bumgardner
722	Caldwell.....	7.40	Recon	*20,923.25	1-18-22	County Forces.
724	Caldwell.....	4.66	T. S.	51,890.66	4-13-23	County Forces—R. M. Thurmond & Co.
725	Caldwell.....	4.00	Recon	28,015.46	2-24-23	County Commissioners.
751	Stokes.....	7.16	T. S.	*35,124.08	10-4-21	W. E. Graham.
760	Surry-Alleghany...	6.9	T. S.	*32,084.18	11-5-22	W. E. Graham.
764	Surry.....	1.63	R. C.	50,588.20	2-4-23	Leaksville Lumber Co.
801	Avery.....	.99	W. B. Mac	22,350.24	10-26-22	Geer & Wilson.
814	Burke.....	8.69	S. C.	13,459.60	4-25-23	M. A. Kollock.
823	Cleveland.....	1.90	P. C.	*80,421.65	8-15-22	Southern Paving Co.—Z. B. Weathers & Son.
844	McDowell.....	1.8	P. C.	*61,233.34	12-13-21	Bolton Construction Co.
845	McDowell.....	7.19	Gravel	132,177.93	12-22-22	J. W. Stapp Constr. Co.—Praytor, Howton & Wood.

(*Final Cost)

STATUS OF STATE WORK IN NORTH CAROLINA---Continued

Projects Completed—Continued

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	COMPLETED	CONTRACTOR
855	Mitchell.....	4.97	P. C.	174,393.78	4-17-23	Fisk-Carter Construction Co.
855B	Mitchell.....		Bridge	*22,699.85	8-22-22	Luten Bridge Co.
866	Polk.....	5.96	Bit Mac	180,393.40	11-21-22	Southern Paving Co.—Henry Constr. Co.
875	Rutherford.....		Bridge	*6,151.61	7-18-22	Geer & Wilson.
877	Rutherford.....	9.79	T. S.	64,563.73	8-7-22	Geer & Wilson.
878	Rutherford.....	6.55	T. S.	44,984.50	10-27-22	Michaux Const. Co.—Geer & Wilson.
879	Rutherford.....		Bridge	*6,781.99	6-21-22	Austin Bros. Bridge Co.
880	Rutherford.....		Bridge	24,679.43	3-23-23	Austin Bros. Bridge Co.
904	Buncombe.....	1.60	A. C.	80,969.13	6-23-23	Asheville Paving Co.—R. C. Stevens.
910	Cherokee.....	7.56	Gravel	76,743.59	2-24-23	Ross Bros. Constr. Co.—W. T. Moore Concrete Prod. Co.
942	Haywood.....	0.57	Gravel	*6,490.43	2-1-22	O'Brien Construction Co.

PROJECTS UNDER CONTRACT

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	CONTRACTOR
189 230 293	Wilson-Greene-Pitt	19.69	P. C.	\$ 812,547.12	Smith Bros., Inc.—Public Service Production Co.
213	Craven.....	10.43	A. C.	447,053.53	Eagle Engineering Co.
291C	Wilson.....	.31	Grade	15,532.00	C. S. Wheeler.
329 155	Columbus.....	12.88	A. C.	422,462.60	Jas. L. Hayworth.
400A	Chatham.....		Grading	5,400.00	C. B. Hester. (fill)
431	Granville.....	3.83	T. S.	42,895.71	Michaux Construction Co.
438	Harnett.....	3.82	P. C.	152,114.88	J. M. Gregory—T. J. Newell.
464	Person.....	11.58	T. S.	86,268.71	Michaux Construction Co.
484B	Wake.....		Bridge	13,060.19	Booz-Boyd & Co.
485C	Wake.....	.51	Grading	10,452.00	Nello Teer. (fill)...
506A	Alamance.....	.32	Grading	9,866.45	Nelo Teer. ...
532C	Guilford.....	.50	P. C.	12,650.00	W. B. Kiker.
556	Montgomery.....	3.07	Pen. Mac.	78,821.60	J. F. Mulligan Construction Co.
608B	Anson.....	3.83	Grading	48,646.51	Ben. F. Teeter—J. A. Peterson.
672	Rowan.....	3.54	A. C.	167,756.27	Stearns Bros. Inc.—J. A. Kries.
702B	Alleghany.....	6.49	Gravel	191,737.26	Turner-Hartsoe-Luten Bridge Co.
802	Avery.....	5.68	Grading	98,043.44	Hughes & Rae.
812	Burke.....	4.89	Grading	58,629.01	M. A. Kollock—Padgett & Justice Co.
836	Henderson.....	9.10	Grading	145,686.75	J. B. Hawkins—W. M. Brown.
837B	Henderson.....	5.83	A. C.	83,113.14	Dixon Construction Co.
882B	Rutherford.....		Bridge	10,576.50	Michaux Construction Co.
930A	Graham.....	2.92	Gravel	12,243.00	C. M. Dicus.

STATUS OF FEDERAL AID WORK IN NORTH CAROLINA

Projects Under Construction

NO.	COUNTY	LENGTH	TYPE	APPROXIMATE COST	BEGUN	CONTRACTOR
15	Guilford.....	4.205	Bit. Mac.	\$ 5,441.75	9-1-17	County Commissioners.
61	New Hanover.....	2.186	P. C.	234,841.39	7-12-20	C. W. Lacy.
69	Transylvania.....	9.348	W. B. Mac.	231,409.04	3-25-20	Allport & Alexander Construction Co.
94A	Mitchell.....	5.04	W. B. Mac.	190,375.13	6-22-20	Gibson Construction Co.
125A	Alleghany.....	4.99	Bit. Mac.	153,899.13	11-22-21	W. E. Graham.

Summary

WORK UNDER CONTRACT

Type	STATE		FEDERAL AID	
	Length	Cost	Length	Cost
P. C.....	\$ 24.01	\$ 977,312.00		\$.....
A. C.....	32.68	1,120,385.54		
Bit. Mac.....	3.07	78,821.60		
T. S.....	15.41	129,164.42		
Gravel.....	9.41	203,980.26		
Graded.....	24.64	392,256.16		
Bridges.....		23,636.69		
Total.....	109.22	\$ 2,925,556.67		

*Summary--Continued***WORK UNDER CONSTRUCTION**

P. C.	350.95	\$	11,438,831.97	2.19	\$	234,841.39
R. C.	67.92		2,433,241.08			
A. C.	282.71		9,063,837.76			
S. A.	20.90		243,332.08			
Bit. Mac.	51.40		1,248,598.28	9.19		159,340.88
W. B. Mac.	150.24		2,701,553.52	14.39		421,781.17
T. S.	375.45		2,818,514.01			
S. C.	154.74		1,191,426.35			
Gravel	190.53		1,834,431.71			
Graded	231.57		1,717,811.93			
Recon.	22.33		179,000.00			
Cord.	2.40		55,818.01			
Bridges			1,040,519.94			
Total	1,901.14	\$	35,966,916.64	25.77	\$	815,966.44

WORK COMPLETED

Type	STATE		FEDERAL AID	
	Length	Cost	Length	Cost
P. C.	24.08	\$ 965,965.87	26.56	\$ 889,940.67
R. C.	29.48	959,343.62		
A. C.	97.80	2,806,484.73	42.29	1,521,368.25
S. A.	3.52	121,564.23	22.91	763,048.82
Bit. Mac.	16.36	380,393.40	30.62	798,895.02
W. B. Mac.	.99	22,350.24	14.00	303,505.78
Brick	9.50	217,405.72		
T. S.	88.77	523,112.10	509.18	5,228,132.54
S. C.	32.70	114,735.18	83.90	785,198.22
Gravel	39.36	522,965.64	42.56	488,699.18
Graded	43.17	226,090.69	29.23	252,426.17
Recon.	43.20	89,966.25		
Bridges		259,884.23		651,051.10
Total	428.93	7,210,261.90	801.25	\$ 11,682,265.75

Total Roadway Mileage 3,266.31. Total estimated cost of Roadway \$56,638,935.63. Total estimated cost of Bridges \$1,562,031.77. Corrected to July 1, 1923.

LEGEND

P. C.—*Plain Concrete. R. C.—*Reinforced Concrete. A. C.—*Asphaltic Concrete. S. A.—*Sheet Asphalt. Bit. Mac.—*Bituminous Macadam. W. B. Mac.—*Water Bound Macadam. T. S.—†Top Soil. S. C.—†Sand Clay. Gravel—†Gravel. Graded—†Graded. Recon.—†Reconstruction. Cord.—†Corduroy.

* Hard Surface. † "G" Type.

Monthly Detour Map Issued

REEPING in mind service to the travelling public the State Highway Commission, through the Publicity Department, has added to the usefulness of the detour report which is issued monthly by including with those mailed to hotels and chambers of commerce, a small blue print map of the State highway system on which are indicated the detours necessary for the month covered by the accompanying report. The detours indicated on the map are not intended to show the direction of the detour but merely indicate between what points there is a detour. This map will enable a motorist to tell at a glance which route may be followed between two points to avoid detours or, if only one road is available, he will know its condition. This service should be of great assistance to motorists as a number of detours are necessary on account of the enormous amount of road construction which is going

on. The reports which are sent out with the maps describe the detours in detail and give exact directions, by following which the motorist is not apt to become confused. All detours throughout the State are carefully marked with yellow signs. This information is to be found in all hotels, chambers of commerce, and in a large number of public libraries, throughout the State. In addition, the Publicity Department of the Commission, at Raleigh, will be glad to answer inquiries regarding routes and road conditions.

Large wall maps, approximately three by eight feet, have been furnished hotels and chambers of commerce in the State and will be found displayed in the lobbies. These maps bear the route numbers and are plainly marked so that a trip may be made through the State with the aid of these numbers which are also shown along the road at frequent intervals.

Greenville-Bethel Highway

(Continued from page 5)

approximate grade. The forms are then set after which the subgrade machine is used to dress the road to final grade. After this subgrade is thoroughly sprinkled the concrete is deposited on it. The concrete is struck off to the proper crown and surface by the Ord surfacing machine, after which it is allowed to stand until the excess water rises to the surface, then it is rolled and belted. As soon as it has dried sufficiently it is covered with burlap which is kept wet until the dikes for the ponds are built and filled with water, as shown in the photograph. These ponds are kept filled with water for fourteen days after which the road stands for an additional seven days when it is cleared off and opened to traffic.

Construction was begun on November 16, 1922, and to date the contractor has laid approximately 11 miles of pavement and should complete the work by the middle of next month. The estimated cost of the work is \$399,855.

Raleigh-Durham Highway

(Continued from page 4)

By the maintenance of local detours and the opening to traffic, as soon as possible, of short stretches of completed pavement, the inconvenience of the travelling public was reduced to a minimum, there being only short periods when through traffic was kept off of the road entirely and provision was made for local traffic at all times.

Project 411, Durham County, extends from the Wake County line to the forks of the Leesville road, a distance of 5.81 miles. The pavement is of plain concrete 18 feet in width and follows the old roadbed practically throughout, thus utilizing the old macadam roadway as a base. The contract was awarded to the Hutton Engineering and Contracting Company, of Savannah, Ga., and was placed under construction September 15, 1921. Considerable delay was experienced on account of lack of water so that the work was only recently completed.

Since the road was paved traffic has increased by leaps and bounds until now the road resembles a city street. Perhaps the most outstanding benefit to the public from the paving of the road is the reduction in bus fares. Before construction was started there was a charge of several dollars made for carrying passengers between the two cities. Since the highway has been hard-surfaced one may ride over in the utmost comfort for the sum of fifty cents. One of a fleet of busses is shown in the accompanying photograph.

Incidentally the completion of these projects completes the paving of what is at present the longest continuous stretch of hard-surface road in the State, namely from the Johnston-Wake County line to Durham on Route 10 thence to Chapel Hill on Route 75, a distance of approximately fifty miles.



On the Famous Corduroy Traction The "Tread" Mark of P & H Excavators

GLANCE OVER THIS LIST OF P & H SHOVELS FEATURES

1. *The P & H crowding motion is controlled independently of the hoisting effort, all the power available at any dipper position.*
2. *The P & H crowd is sufficient to allow dipper stick to be extended when dipper is in highest loaded position. The dipper can be pushed out as it breaks through top of bank.*
3. *The power back of the P & H crowd and the design of the P & H crowding mechanism allows raising the dipper above boom point sheave. After cutting thru top of bank, dipper of P & H Shovel can be extended to load wagon or truck.*
4. *The P & H has large digging radius.*
5. *Dipper moved backward and forward rapidly.*
6. *Simple rugged fool-proof mechanism.*

These features are fully explained in the new Bulletin 58-X, and scores of photographs showing how contractors are using P & H excavating equipment are also included. Tell us where to send your copy.

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An *Osgood* can only be fully appreciated after it has been seen. Watch one at work. Our new Bulletin 231 will tell you more about them.

¾-1 and 1¼ yd. Revolving type Steam Shovels, Clamshells, Draglines 1½ to 6 yd. Rail road type Steam Shovels.



OSGOOD ¾ yd. H. D. Grading Highway in Indiana

The OSGOOD COMPANY
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“Standard” Paving Asphalt

has been successfully used on some of the most important highway projects in North Carolina.

This asphalt is refined from the straight Mexican asphaltic base petroleum, its purity being over 99.8%. “STANDARD” PAVING ASPHALT meets all the tests of a paving cement for asphalt concrete or sheet asphalt pavement, its uniformity and ability to resist extremes of temperature making it especially suited for these types of construction.

“STANDARD” PAVING ASPHALT has been used in practically every large city in the east.

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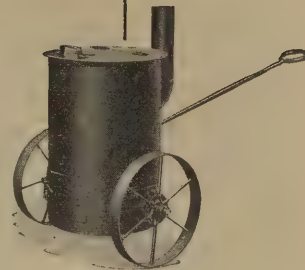
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Littleford Tar and Asphalt Heaters are durably constructed of heavy gauge steel, properly reinforced and compactly arranged to make handling and moving about a convenient and easy matter. They are made in various styles and different capacities to suit individual requirements.

Be assured of receiving dependable heater service by ordering Littleford Equipment. Our new catalogue of paving tools and equipment is now ready. A copy will be sent on request.

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A Haiss "Creeper" Truck Loader is the logical choice for road building and quarry work

Logical because it does more work at less cost—and earns a greater profit on the investment it represents. This is more than an opinion; it is borne out by the experience of users all over the country. And the equipment has a longer life and a greater salvage value than less substantial machinery.

A Haiss Loader is the only machine which combines the three motions essential to fully efficient loading. It loads itself, feeds itself and crowds into the pile at a slow speed simultaneously. Only one operator and not a shovel anywhere. Every bucket digs a full load—watch them.

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Metal Culvert

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Washed and Screened Sand Gravel Crushed Stone

Conforming to the specifications of the North Carolina
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Prompt shipments by rail or water

Favorable freight rates to all North Carolina points

Quotations gladly furnished on request

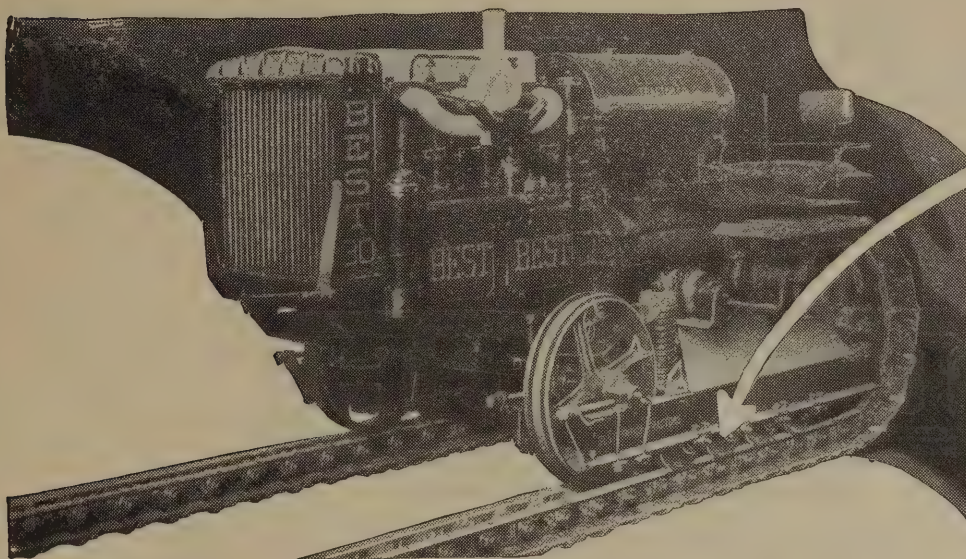
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TRUCK ROLLERS *that* LAST!

THE DRIVING WHEELS of the most powerful locomotives have forged steel rims.

The Truck Rollers of a track type tractor support the weight of the tractor and the flanges of rollers must withstand severe jars and side strains of side hill work and rough going.

On Best Tractors the flanged rims of truck rollers are drop forgings—nothing less—forged into shape under heavy steam hammers, from heated steel of special analysis. After being forged the rims are annealed, bored and reamed, then turned true on the outside tread. They are next shrunk on accurately machined hubs—be-

ing hardened at the same time—hardened to resist battering blows just as are the heads of first-class forged hammers or sledges.

The rollers, complete, are mounted on anti-friction bearings to insure easy running, bearings with seals to retain lubricant and to prevent entrance of sand and ruinous grit.

The truck rollers of Best Tractors run over tracks which are true and straight. Tracks are made from drop forged hardened links which have been accurately machined top and bottom and large hardened spools and pins at each joint contribute to the long life which may be expected from the tracks on Best Tractors.

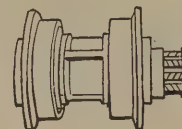
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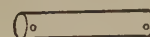
Truck Roller



Track Link Assembly



Track Spool



Track Pin



Heavy Cotter for Track Pin



"When Greek meets Greek." Both the sledge and the flanged roller rims are hardened drop forged steel.



1222-4

BEST TRACTORS

The National Cement



FOLLOWING closely the natural demand for cement, and offering advantages in the way of service and shipping facilities, are the sixteen great Lehigh mills stretching from coast to coast.

This nation-wide distribution makes Lehigh Cement readily available to practically any locality, thus insuring uniformity of material and prompt delivery to any job. Lehigh's square-deal policy is added assurance of satisfaction in the use of Lehigh—The National Cement.

16 MILLS FROM COAST TO COAST



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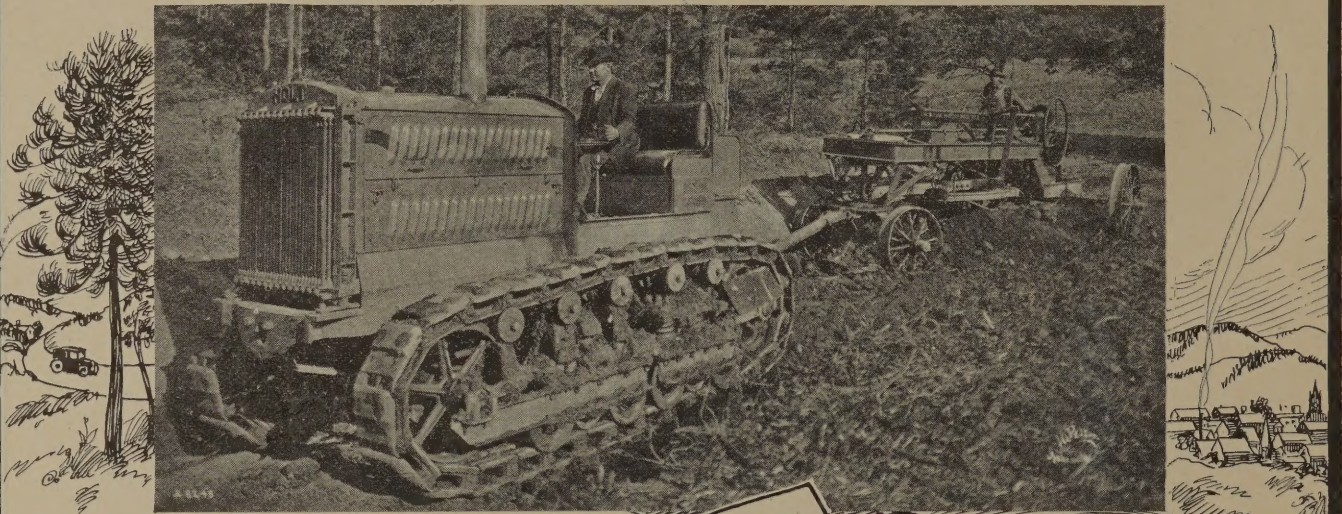
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A REAL OUTFIT ON
REAL ROAD WORK

Dependability!

BUNCOMB COUNTY COMMISSIONERS
ASHEVILLE N.C. MAY 15th. 1923

Some time ago the Commissioners of Buncomb County decided that there must be some faster, better and more economical way to widen and maintain County roads than by the old side and hand labor method. After some investigation we decided to use what tractor and what grader would do the most work for the least amount of money for upkeep and operation, as we realized that the first cost is usually the small end of equipment.

We advertised for bids and found that there were more makes of tractors and graders than we had ever dreamed of, both mechanical and as to service. Investigation, both mechanical and as to service, we decided to purchase one ten ton Holt Caterpillar Tractor and one Stockland Giant Quicklift Twelve Foot Grader, for our heavy outfit.

This equipment was delivered and put to work in a very short time after the order was given. It has been surpassing our fondest hopes ever since. The tractor is flexible, easy riding and has abundant power for the heaviest mounting it is very fast for such a large machine.

The grader is equally as strong as the tractor, three speeds forward and spring mounted. We find that the Quicklift is a great time-saver, as is power full, as we have never broken a thing. We find that the Quicklift is a great time-saver, as you do not have to stop for bridges or culverts.

After using this combination on our own County roads, we are thoroughly convinced that we made the right selection and we would heartily advise any County to profit by our experience and do likewise.

Buncomb County Commissioners,
E. M. Lyda
Chairman.

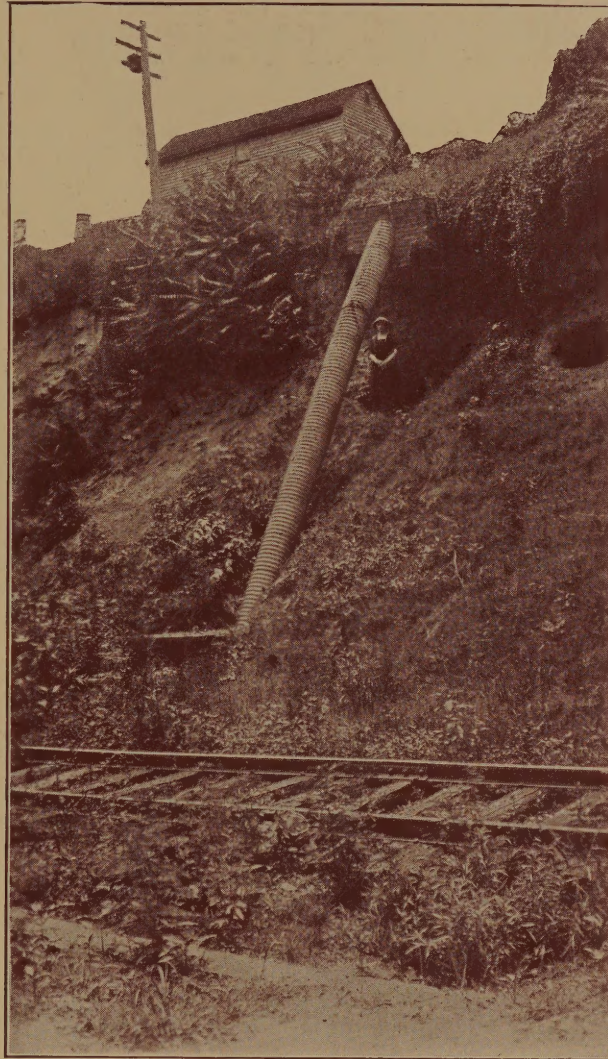
Economy!

Satisfaction!

There's Only One **"CATERPILLAR"** Holt Builds It

Report of Inspection of

A PERMANENT CULVERT



18" Culvert Twenty-six feet long.

Installed 1913, up the side of the cut on the Winston-Salem Southbound Railway at Winston-Salem, North Carolina. A terra cotta pipe line enters this culvert through the brick "header" at the upper end of the pipe.

The soil has washed from under the pipe, making a "beam" of it. The corrugated pipe now supports the brick headwall and a joint of the tile. Present condition is excellent. No other pipe construction has the resiliency and strength of the corrugated culvert.



THE DIXIE CULVERT & METAL COMPANY

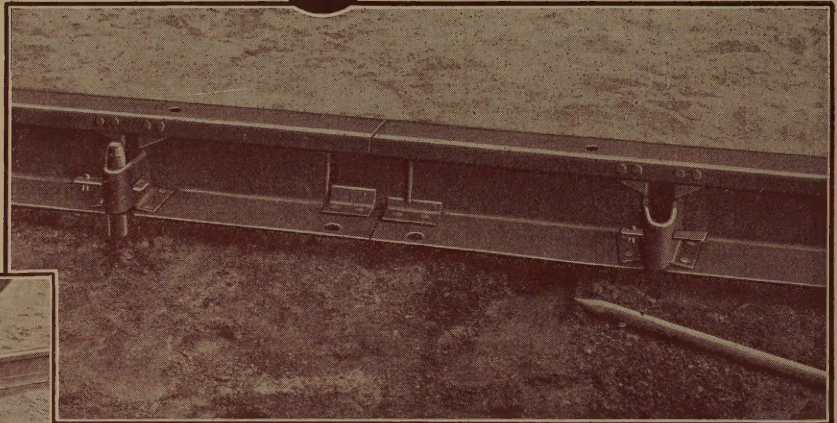
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J. G. BALDWIN,
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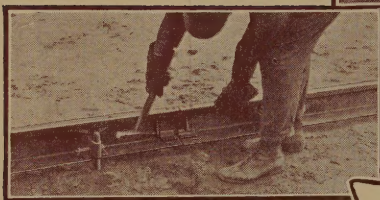
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FORM SETTING *can be an* Easy Job

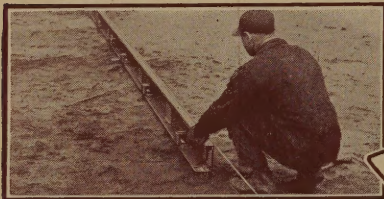


Note the rigid joint connection independent of ground support.



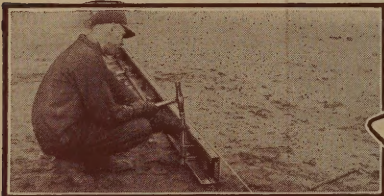
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Adjacent sections joined by one blow on lock-joint—automatically set to line and grade.



LINING UP—

Set to line regardless of irregular ground conditions.



STAKING—

Holds the form in proper alignment.



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Locked with the ever-fast key—ready for the next section.

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Improved "CK" Type—No. 9 Gauge }

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